

REMARKS

Claims 1-10, all the claims pending in the application, stand rejected on prior art grounds.

Claim Rejections - 35 U.S.C. § 103(a)

Claims 1, 2, 6-8, 10 are rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over the article entitled “Evolving WCDMA” by Hedberg et al. (hereinafter “Hedberg”) in view of the article entitled “Transmit Diversity applied on the CDMA/TDD cellular system” by Hiramatsu et al. (hereinafter “Hiramatsu”), and further in view of U.S. Patent Application Publication No. 2003/0210668 Malladi et al. (hereinafter “Malladi”) and further in view of U.S. Patent No. 6,449,484 to Grubeck et al. (hereinafter “Grubeck”).

Applicants traverse the rejections at least for the following reasons.

Without conceding to the above rejections, Applicants amend independent claim 1 to recite, in part:

“assigning the carrier frequency to each user equipment in the group which includes the one of the plurality of user equipments; and
 assigning a second carrier frequency to each user equipment in another group among the plurality of groups,
 wherein the carrier frequency and the second carrier frequency are alternately assigned to the plurality of user equipments in an order in which the plurality of user equipments become active.”

These amendments are supported at least by pages 10-13 of the specification. For example, in a non-limiting exemplary embodiment described on page 10 of the specification, the assignment of carrier frequencies to UEs is performed by appropriate signalling between the UEs and the transmitter 100 of the telecommunication system such that the carrier frequencies are assigned to UEs which become active alternatingly. Accordingly, heavy peak loads can be avoided by means of a single-carrier or multi-carrier scheduling technique, as discussed on page 13 of the specification. Additionally, the load of the power amplifiers is balanced.

It will be appreciated that the foregoing remarks relate to the invention in a general sense, and the remarks are not necessarily limitative of any claims and are intended only to help the Examiner better understand aspects of the claims.

In framing the rejections, the Examiner asserts that the combination of Hedberg, Hiramatsu, and Malladi teaches many features of independent claim 1. The Examiner acknowledges that the combination of Hedberg, Hiramatsu, and Malladi does not teach splitting the user equipments approximately evenly into a plurality of groups, and assigning an antenna to each of the groups (page 5 of the Office Action). The Examiner relies on Grubeck as allegedly curing these deficiencies. In particular, the Examiner asserts that Figures 3 and 4 and columns 8 and 9 of Grubeck teach a base station which transmits to a plurality of user equipments in which each of two antennas are assigned to two user groups which are grouped substantially evenly.

Grubeck is directed to the assignment of channels by a base station BS to a plurality of mobile stations MS1-MS4. The base station BS is equipped with a plurality of adaptive antennas 310-340. Grubeck discloses that two mobile stations MS_{n_k} and MS_{m_k} are assigned to each of two channels, and a cost function Ψ is used to determine how the mobile stations are allocated to the respective channels at any given instant. The cost function Ψ takes into account different combinations of the following factors: 1) power requirement P of each mobile station MS1-MS4 from the base station BS, 2) the effective transmission times T of each mobile station MS1-MS4, and 3) which directional bearing A relative to the base station BS the mobile stations MS1-MS4 are positioned. For example, as shown in Figure 3, mobile stations MS3 and MS4 are assigned to a first channel CH1 for communication with the base station BS via a portion of antenna 310, and mobile stations MS1 and MS2 are assigned to a second channel CH2 for communication with the base station BS via another portion of antenna 310.

The Examiner interprets Grubeck's mobile stations MS1-MS4 as the claimed plurality of user equipments. The Examiner further interprets Grubeck's allocation of the mobile stations to CH1 and CH2 for communication via different portions of antenna 310 as the claimed splitting of the user equipments and assigning of an antenna to each group. The Examiner asserts that it would have been obvious to one of ordinary skill in the art to modify the combination of Hedberg, Hiramatsu, and Malladi to assign each of the antennas to users groups which are grouped substantially evenly, as taught by Grubeck, for load balancing to result in high efficiency for the system (page 5 of the Office Action).

However, Grubeck fails to teach or suggest that a carrier frequency and a second carrier frequency are alternately assigned to the plurality of user equipments in an order in which the plurality of user equipments become active, as recited by claim 1. Indeed, Grubeck is silent about assigning different carrier frequencies to different user equipments, let alone the manner in which such carrier frequencies are assigned. Further, Grubeck appears to suggest that different channels are assigned a same carrier frequency (col. 2, lines 61-63).

Moreover, the Examiner's rationale for combining Grubeck with Hedberg, Hiramatsu, and Malladi (i.e., to provide load balancing) stems from Applicants' own disclosure. This is impermissible. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991) (MPEP § 2142). Absent Applicants' own disclosure, there is no reason a skilled artisan would combine the teachings of Grubeck with those of Hedberg, Hiramatsu, and Malladi as proposed by the Examiner. For instance, only the Applicants' disclosure, not Grubeck, recognizes that alternatingly assigning the carrier frequencies to UEs provides load balancing (e.g., See at least the third full paragraph on page 10 of the specification). Therefore, the Examiner's reasoning to

combine the references for load balancing is clearly based on impermissible hindsight since this reasoning is explicitly found only in the Applicants' disclosure.

Moreover, contrary to the Examiner's assertions, Grubeck discloses the desirability of minimizing transmission energy, not balancing the load. Specifically, Grubeck discloses that the mobile stations are allocated in such a manner that the total energy transmitted from the base station BS is minimized for transmitting information to the mobile stations MS1-MS4 (See abstract). Furthermore, Grubeck does not teach or suggest that allocating two mobile stations to each channel accomplishes this effect. Instead, two is merely the maximum number of mobile stations which may utilize each channel at any given time (col. 11, lines 27-28). Indeed, Grubeck discloses that, in some cases, assigning all of the mobile stations MS1-MS4 to the same channel, and delaying the transmission of signals such that only two mobile stations utilize the channel at any given time, will minimize the energy transmitted from the base station BS (col. 11, lines 25-46). Thus, Grubeck's disclosure of allocating two mobile stations to each of channels CH1 and CH2 is not a feature which reaches Grubeck's desired result of minimizing transmission energy. As such, contrary to the Examiner's assertions, one of ordinary skill in the art would not have looked to the teachings of Grubeck to reach the claimed splitting of the plurality of user equipments substantially evenly into a plurality of groups and assigning an antenna of a set of antennas to each of the plurality of groups for the purpose of balancing the load.

For all of the foregoing reasons, Applicants submit that the Examiner has not established a *prima facie* case of obviousness. Accordingly, we would submit that claim 1 is not rendered unpatentable by Hedberg, Hiramatsu, Malladi, and Grubeck.

Independent claims 6, 7, and 10 are amended to recite features similar to those discussed above in conjunction with claim 1. Accordingly, Applicants submit that these claims are patentable at least for reasons analogous to those discussed above regarding claim 1. Applicants further submit that claims 2 and 8 are patentable at least by virtue of their dependency on one of claims 1 and 7.

Claims 3-5 and 9 are rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Hedberg, Hiramatsu, Malladi, and Grubeck in view of U.S. Patent Application Publication No. 20020145988A1 to Dahlman et al. (hereinafter “Dahlman”).

Dahlman does not cure the above noted deficiencies of Hedberg, Hiramatsu, Malladi, and Grubeck with respect to claims 1 and 7. Accordingly, Applicants submit that claims 3-5 and 9 are patentable at least by virtue of their dependency on one of claims 1 and 7.

Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,

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